Upper Pleistocene Fan 2 (UPL F2) Play

Hyalinea "B" through Sangamon Fauna

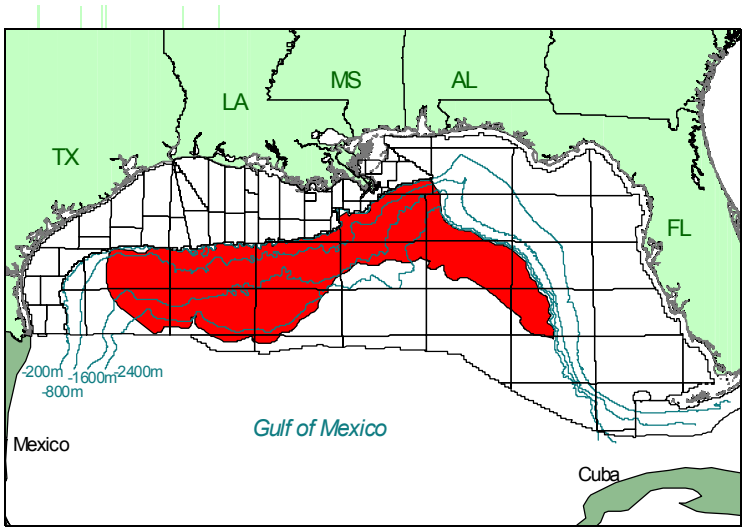

Figure 1. Play location.

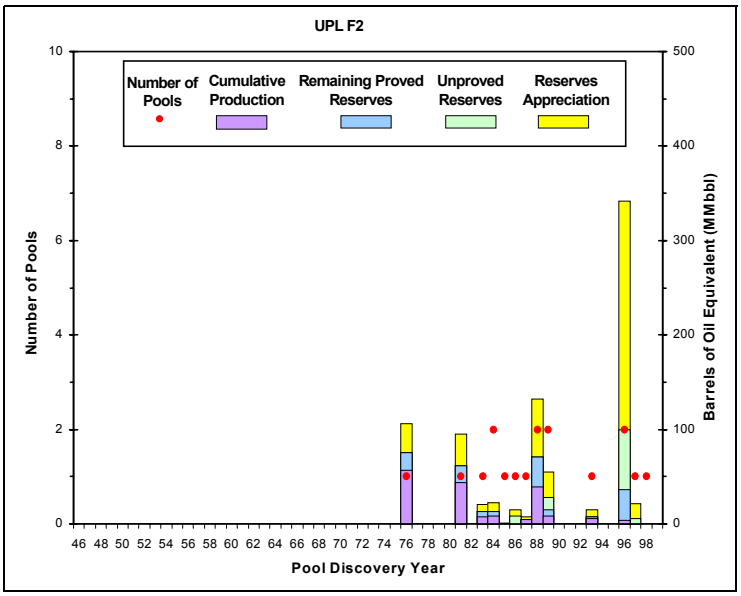

Figure 2. Exploration history graph showing reserves addition and number of pool discoveries by year.

UPL F2 Play 17 Pools 74 Sands	Minimum	Mean	Maximum
Water depth (feet)	663	1520	3153
Subsea depth (feet)	3312	7668	12856
Number of sands per pool	1	4	22
Porosity	27%	32%	35%
Water saturation	16%	25%	44%

Table 1. Pool attributes. Values are volume-weighted averages of individual reservoir attributes.

Play Description

The established Upper Pleistocene Fan 2 (UPL F2) play occurs within the *Hyalinea* "B," *Trimosina* "B," *Trimosina* "A" 2nd occurrence and *Trimosina* "A" 1st occurrence biozones, and Sangamon Fauna. The play is also defined by deep-sea fan sediments in a structural regime of allochthonous salt sheets and canopies with intervening salt-withdrawal basins located on the modern Gulf of Mexico Region slope. The play encompasses an area from the central East Breaks and Alaminos Canyon Areas to the southern Viosca Knoll and western Desoto Canyon Areas east of the Mississippi River Delta, and southeast to The Elbow and Vernon Areas offshore Florida (figure 1).

Updip, the UPL F2 play is bounded by the Upper Pleistocene Fan 1 (UPL F1) play. The UPL F2 play does not extend farther to the west because of a lack of sediment influx at the edge of the UPL depocenter. To the east, the play onlaps the Cretaceous carbonate slope. Downdip in the western and central Gulf of Mexico Regions, the UPL F2 play is limited by the farther downdip occurrence of either (1) the Sigsbee Salt Canopy Escarpment, where the farthest extent of large salt bodies overrides the abyssal plain, or (2) the downdip limit of the Perdido Fold Belt and Mississippi Fan Fold Belt Plays. Downdip in the eastern Gulf Region, the play is limited by the southern extent of Louann Salt deposition, as defined by the downdip extent of the Upper Cretaceous to Upper Jurassic Salt Roller/High-Relief Salt Structure (UK5-UJ4 S1) play.

Play Characteristics

Component facies include channel/levee complexes, sheet-sand lobes, interlobes, lobe fringes, and slumps deposited on the UPL

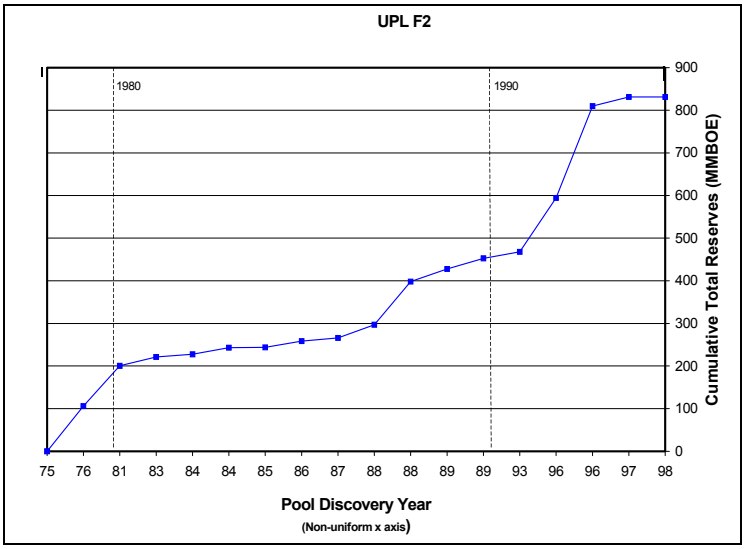

Figure 3. Plot of pools showing cumulative reserves by discovery order. Note the non-uniform x axis.

UPL F2 Play Marginal Probability = 1.00	Number of Pools	Oil (Bbbl)	Gas (Tcf)	BOE (Bbbl)
Reserves				
Original proved	13	0.098	1.134	0.300
Cumulative production	–	0.051	0.724	0.180
Remaining proved	–	0.047	0.410	0.120
Unproved	4	0.020	0.388	0.089
Appreciation (P & U)	–	0.155	1.612	0.442
Undiscovered Conventionally Recoverable Resources				
95th percentile	–	0.659	6.135	1.848
Mean	98	0.971	7.790	2.357
5th percentile	–	1.475	11.149	3.235
Total Endowment				
95th percentile	–	0.932	9.270	2.679
Mean	115	1.244	10.925	3.188
5th percentile	–	1.748	14.284	4.066

Table 2. Assessment results for reserves, undiscovered conventionally recoverable resources, and total endowment.

upper and lower slopes, in topographically low areas between salt structure highs, and on the abyssal plain. These deep-sea fan systems are often overlain by thick shale intervals representative of zones of sand bypass on the shelf, or sand-poor zones on the slope.

Most of the fields in UPL F2 play are structurally associated with salt bodies with hydrocarbons trapped on salt flanks or in sediments draped over salt tops. Seals are provided by the juxtaposition of reservoir sands with shales and salt, either structurally (e.g., faulting, diapirism) or stratigraphically (e.g., lateral shale-outs, overlying shales).

Discoveries

The UPL F2 mixed oil and gas play contains total reserves of 0.273 Bbo and 3.135 Tcfg (0.831 BBOE), of which 0.051 Bbo and 0.724 Tcfg (0.180 BBOE) have been produced. The play contains 74 producible sands in 17 pools, of which 13 contain proved reserves (table 1; refer to the Methodology section for a discussion of reservoirs, sands, and pools). The first reserves in the play were discovered in 1976 in the Garden Banks 236 field (figure 2). Maximum yearly total reserves of 342 MMBOE were added in 1996 when two pools were discovered, including the largest pool in the play in the Garden Banks 516 field (Sorano) with 215 MMBOE in total reserves (figures 2 and 3). Fifty-four percent of the play's total reserves and 95 percent of its cumulative production have come from pools discovered before 1990. The most recent discovery prior to this study's cutoff date of January 1, 1999, was in 1998.

The 17 discovered pools contain 153 reservoirs, of which 50 are nonassociated gas, 89 are undersaturated oil, and 14 are saturated oil. Cumulative production has consisted of 72 percent gas and 28 percent oil.

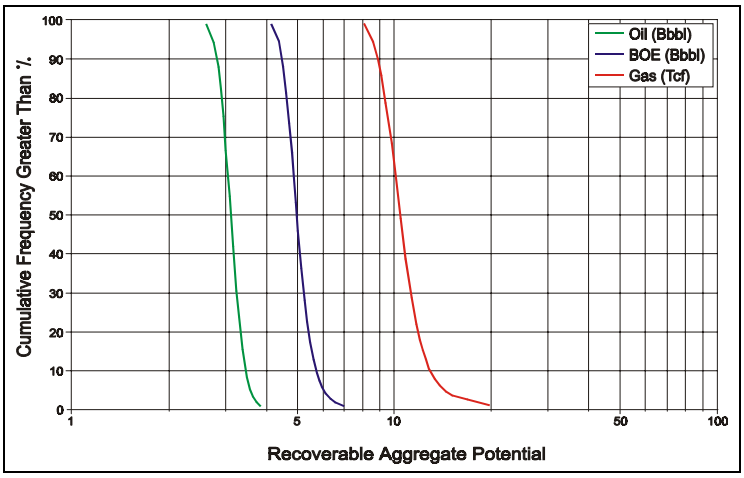

Figure 4. Cumulative probability distribution for undiscovered conventionally recoverable resources.

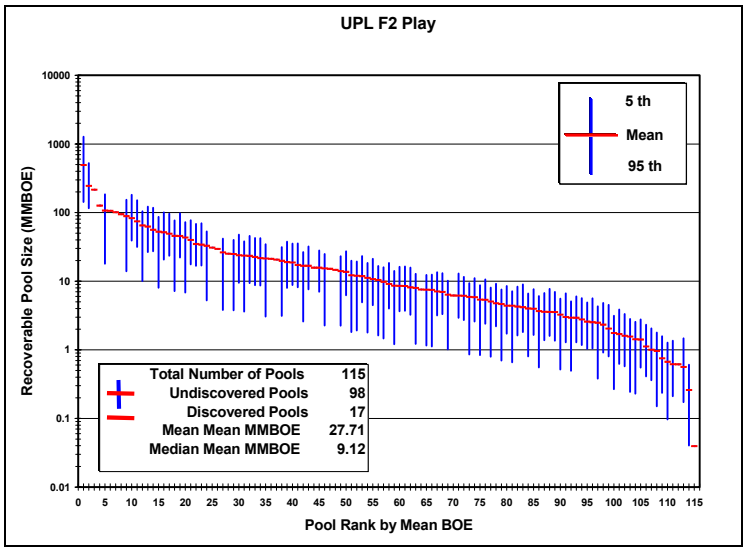

Figure 5. Pool rank plot showing the number of discovered pools (red lines) and the number of pools forecast as remaining to be discovered (blue bars).

Assessment Results

The marginal probability of hydrocarbons for the UPL F2 play is 1.00. This play has a mean total endowment of 1.244 Bbo and 10.925 Tcfg (3.188 BBOE) (table 2). Six percent of this BOE mean total endowment has been produced.

Assessment results indicate that undiscovered conventionally recoverable resources (UCRR) have a range of 0.659 to 1.475 Bbo and 6.135 to 11.149 Tcfg at the 95th and 5th percentiles, respectively (figure 4). Mean UCRR are estimated at 0.971 Bbo and 7.790 Tcfg (2.357 BBOE). These undiscovered resources might occur in as many as 98 pools. The largest undiscovered pool, with a mean size of 493 MMBOE, is also forecast to be the largest pool in the play (figure 5). The forecast places the next four largest undiscovered pools in positions 2, 5, 9, and 10 on the pool rank plot. For all the undiscovered pools in the UPL F2 play, the mean mean size is 24 MMBOE, which is smaller than the 49 MMBOE mean size of the discovered pools. The mean mean size for all pools, including both discovered and undiscovered, is 28 MMBOE.

The UPL F2 is an immature play with BOE mean UCRR projected to add 74 percent to the play's BOE mean total endowment. Exploration potential continues to exist around salt in deep structural and stratigraphic traps, as well as in structures located underneath salt overhangs and allochthonous salt sheets.